

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ 1216-2021

Water quality - Determination of phytoplankton - 0.1 ml chamber - Microscope counting method

水质 浮游植物的测定 0.1ml 计数框-显微镜计数法

(English Translation)

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1 Scope of application

This standard specifies the 0.1 ml counting box-microscopic counting method for the determination of phytoplankton in water.

This standard applies to the density determination of phytoplankton in surface water.

When the sample is concentrated 50 times, the detection limit of the diagonal counting method is 9.2×10^3 cells/L; the detection limit of the row counting method is 3.0×10^3 cells/L; the detection limit of the whole film counting method is 9.2×10^2 cells/L; the detection limit and observation of the random field counting method it is related to the number of fields of view and the field of view area of the microscope, and is calculated according to Appendix A.

2 Normative references

This standard refers to the following documents or clauses thereof. For dated references, only the dated version applies to this standard.

For undated references, the latest edition (including all amendments) applies to this standard.

GB/T 14581 Technical Guidelines for Sampling of Water Quality in Lakes and Reservoirs
HJ/T 91 Technical Specification for Surface Water and Sewage Monitoring HJ 494 Water Quality Sampling Technical Guide

3 Terms and Definitions

The following terms and definitions apply to this standard.

phytoplankton

The tiny algae that live planktonic life in water, usually phytoplankton are planktonic algae, including prokaryotic cyanobacteria and other types of eukaryotes algae.

microscope counting field A defined area in the microscope field of view used to quantitatively count phytoplankton.

detection limit

During a single count, the probability of discovery is not lower than the lowest phytoplankton density at 99%.

4 Principles of the method

Under the microscope, manually classify and count the phytoplankton in the sample using a 0.1 ml counting box, and calculate the unit volume of the sample.

Cell numbers of various phytoplankton species.

5 Reagents and Materials

Unless otherwise stated, analytical reagents that meet national standards were used in the analysis, and the experimental water was freshly prepared deionized water or distilled water.

5.1

Iodine (I₂).

5.2

Potassium iodide (KI).

5.3

Formaldehyde solution. $w(\text{HCHO})=37\%\sim 40\%$.

5.4

Glycerol ($\text{HOCH}_2\text{CHOHCH}_2\text{OH}$).

5.5

Lugol's iodine solution.

Weigh 60 g of potassium iodide (5.2), dissolve it in 100 ml of water, add 40 g of iodine (5.1), stir well to dissolve it completely, add water Dilute to 1000 ml, transfer to a brown ground-mouth glass bottle, and store at room temperature away from light.

6 Instruments and equipment

6.1

No. 25 plankton net. the diameter of the mesh is 0.064 mm, the net is conical, the net mouth is set on the copper ring, and there is a water outlet switch at the bottom of the net. plug.

6.2

Qualitative sampling bottle. 30 ml ~ 100 ml wide-mouth polyethylene bottle.

6.3

Water collector. stainless steel or plexiglass material, cylindrical. Capacity and depth specifications to meet sampling requirements.

6.4

Quantitative sampling bottle. 1L~2L wide-mouth polyethylene bottle.

6.5

Upright or inverted biological microscope. objective lens 4x, 10x, 20x, 40x, eyepiece 10x or 15x.

6.6

Concentrating device. 1 L ~ 2 L cylindrical separatory funnel or measuring cylinder.

6.7

Vials. 50 ml amber glass jars with stoppers.

6.8

Ultrasonic generating device. working frequency 40 kHz, water bath mode.

6.9

Micropipette. 100 μ l.

6.10 0.1 ml phytoplankton counting frame. the area is 20 mmx20 mm, and the frame is divided into 10 horizontal and vertical grids, with a total of 100 small grids.

6.11

Cover glass. the area is 22 mm x 22 mm, and the thickness is less than 0.2 mm.

6.12

Stage micrometer. also known as stage micrometer, 1 mm/100 DIV, with a division value of 0.01 mm.

Note: DIV refers to equal division, 1 mm/100 DIV means that 1 mm is divided into 100 divisions.

6.13

Eyepiece reticle. also known as eyepiece micrometer, 5 mm/50 DIV, with a division value of 0.1 mm.

6.14

Counters.

6.15

Common laboratory instruments and equipment.

7.1.1 Qualitative samples

The point layout and sampling frequency shall be implemented in accordance with the relevant regulations of GB/T 14581, HJ/T 91 and HJ 494.can also be based on research ok.

Collect qualitative samples using plankton net 25 (6.1). Turn off the water outlet piston switch at the bottom of the plankton net, at the surface of the water to 0.5 m in the depths, reciprocate in an "infinity" shape at a speed of 20 cm/s to 30 cm/s, and drag slowly for about 1 to 3 minutes, until there are obvious phytoplankton in the net.

After entering, lift the plankton net (6.1) out of the water surface, the water in the net is naturally filtered out through the mesh holes, and there is a little water sample (5 ml ~ 10 ml) left at the bottom.

, move the bottom outlet into the qualitative sampling bottle (6.2), and open the bottom piston switch to collect qualitative samples. When collecting layered samples, use 25 no. plankton net (6.1) to filter specific water layer samples, and other steps are the same as collecting surface samples. After the qualitative sample collection is completed, the